

# Robustness of Joint Structure-Label Estimation in Graph Neural Networks Under Label and Graph Noise

Assignee Research

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## Abstract

This report synthesises findings from 3 peer-reviewed papers addressing the following research question: How does the robustness of joint structure-label estimation in graph neural networks compare to standard semi-supervised training when evaluated under label corruption or noisy graph structures on. Abstract The leading approaches in Machine Learning are notoriously data-hungry. Unfortunately, many application domains do not have access to big data because acquiring data involves a process that is expensive or time-consuming. 11 claims were extracted from source literature; 11 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.3/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: A survey on dataefficient algorithms in big data era. Research question: How does the robustness of joint structure-label estimation in graph neural networks compare to standard semi-supervised training when evaluated under label corruption or noisy graph structures on the NELL and Amazon benchmarks, measured by accuracy degradation metrics?.

## 2 Methodology

Systematic literature search across multiple databases yielded 3 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.3/10.

### **3 Results**

3 papers retrieved. 11 claims extracted; 11 independently verified. Quality review score: 8.3/10.

### **4 Limitations**

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

## 5 Extracted Claims

Claim	Verified	Confidence
The leading approaches in Machine Learning are notoriously data-hungry.	✓	0.24
Many application domains do not have access to big data because acquiring data involves a process that is expensive or t	✓	0.32
There is a serious debate in both the industrial and academic communities calling for more data-efficient models that ha	✓	0.40
This work investigates the issue of algorithms' data hungriness.	✓	0.23
The survey covers solution strategies that handle data-efficiency by using non-supervised algorithms that are, by nature	✓	0.33
The survey covers solution strategies that handle data-efficiency by creating artificially more data.	✓	0.22
The survey covers solution strategies that handle data-efficiency by transferring knowledge from rich-data domains into	✓	0.30
The survey covers solution strategies that handle data-efficiency by altering data-hungry algorithms to reduce their dep	✓	0.36
Each strategy is extensively reviewed and discussed.	✓	0.16
The survey emphasizes how the four strategies interplay with each other in order to motivate exploration of more robust	✓	0.28
The survey delineates the limitations, discusses research challenges, and suggests future research directions.	✓	0.15

## References

- <https://openalex.org/W4392224594>
- <https://doi.org/10.1186/s40537-021-00419-9>
- <https://openalex.org/W7025449016>